

INITIAL DRAFT

Ethylene Oxide

Sasol Chemicals

EPA Region 6 Public Outreach

U.S. Environmental Protection Agency

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Ethylene Oxide

Communications

for the community near the Sasol Westlake, LA
facility

EPA Region 6 Public Outreach

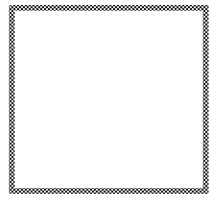
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Discussion Points

- Health Risks Associated with Ethylene Oxide
- Review of Ethylene Oxide
- Action from Sasol

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Location of Sasol



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Health Risks Associated with Ethylene Oxide

Short-term (acute) Risk

**Long-term (chronic or lifetime exposure) Risk:
Carcinogen**

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What is the Possible Public Risk from emissions at Sasol Chemicals?

	2014	2018
Emissions (EtO in lbs)	12,640	2,237
Risk Estimate (in 1 million)	841	300

Note: 2020 emissions are 3,176 lbs., but risk is estimated over 70 years.

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Human Health Concerns

- Estimated risk of possibly getting cancer from breathing ethylene oxide is based on exposure for 24 hours a day for 70 years
- One-time, short-term exposure to low amounts of ethylene oxide should not cause immediate harm to a person's health
- Types of cancer potentially associated with long-term ethylene oxide exposure: lymphoma, leukemia, breast cancer

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Estimated Non-Cancer risk

If a Hazard Quotient (HQ) for a chemical is equal to or less than 1, EPA believes there is no appreciable risk that non-cancer health effects will occur.

If the HQ is greater than 1 then there is at least some possibility for an adverse health effect. The larger the HQ value, the more likely an adverse health effect may occur.

Sasol Chemicals had an estimated HI of 3 due primarily to chlorine emissions and the respiratory system as the target organ.

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Human Exposure Model for Risk

- Used primarily for sources emitting air toxics to the air
- Addresses the inhalation exposure and designed to estimate risks from chemicals emitted into the air
- Produces estimates of cancer risk and noncancer hazards for air toxics
- More information can be found at: <https://www.epa.gov/fera/risk-assessment-and-modeling-human-exposure-model-hem>

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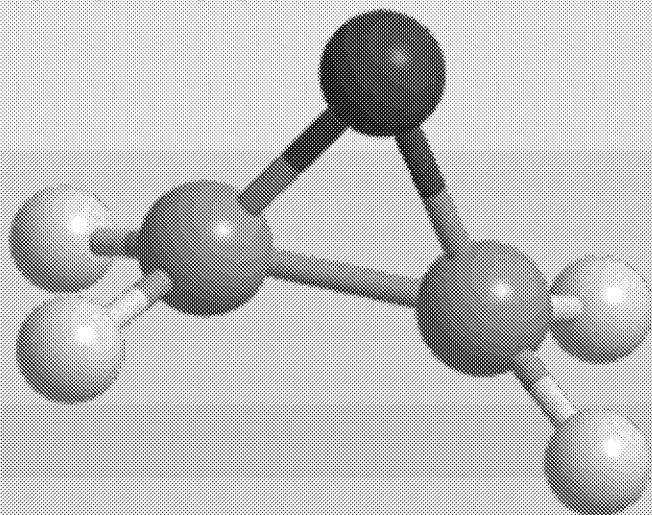
Background levels

- EPA has sampled the air for ethylene oxide across the nation as part of our air toxics network
- We found results not associated with a particular source and equate that with background concentrations
- We are continuing to study the areas to better understand where the ethylene oxide is coming from

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What is Ethylene Oxide?

- Is a colorless gas at room temperature
- Is flammable
- Is used to make other chemicals
- Is a sterilizing agent
- Is found in nature



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Ethylene Oxide and Sasol

- The Lake Charles Chemical Complex has multiple manufacturing units which produce various products and chemicals used to make other products. A research and development laboratory is also on site.
- Manufacturing at the Lake Charles site includes EtO production, as well as production of ethylene glycol and ethoxylated alcohol created by combining EtO with other substances on site in various processes.

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How did EPA identify Sasol Chemicals?

NATA: National Air Toxics Assessment

- Screening-level analysis intended to identify pollutants or areas for closer examination
- Identifies areas potentially having elevated health risks
- 2014 ethylene oxide emissions from Sasol Chemicals in Westlake, LA were predicted by NATA as a primary cause of some elevated potential public health risks in the area.

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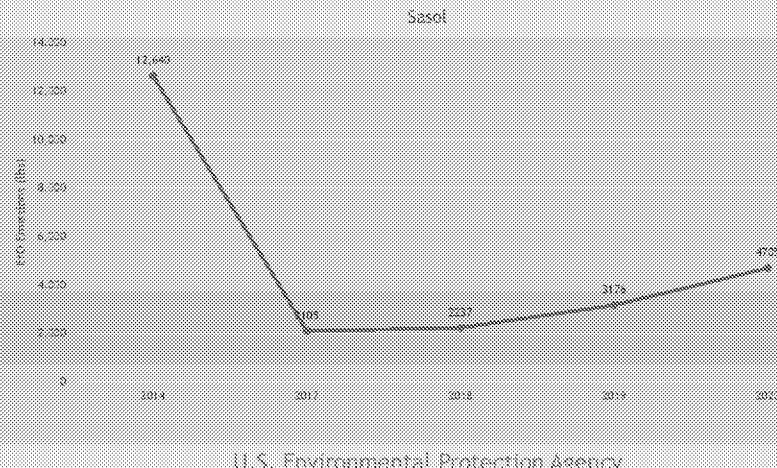
Timeline for Communication

- On October 15, 2020, EPA Region 6 sent letter to request assistance from the State of Louisiana in gathering the most current information on the specific ethylene oxide emitting facilities, including Sasol Chemicals, and to assist with the development of technical assessments.
- On April 8, 2021, EPA and LDEQ held a conference call with Sasol Chemicals to discuss facility efforts to reduce reported EtO emissions.
- EPA continues to communicate with the State of Louisiana to obtain updated and accurate facility emissions and control data on EtO.

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Changes in EtO since 2014

From 2014-2020, through emission reductions and/or re-evaluation of actual emission levels, reported EtO annual emissions at the Sasol facility were reduced about 63 percent.



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Ethylene Oxide and Sasol

- In July 2019, Sasol hired an emissions testing firm to conduct testing on vents from the EtO process and EtO storage/unloading and byproducts storage/loading.
- **Result: Indication of an actual destruction and removal efficiency of 99.9% for EtO, which meant an over-reporting of EtO emissions from 2014 to 2018.**

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Wrap Up

The updated facility EtO emissions data decreased the previously reported annual EtO emissions from 2014 to 2020 about 63%.

- Vapor control unit testing for destruction and removal efficiency and lowering of operating hours that the flare serves as backup is anticipated to further reduce reported EtO emissions based on more accurate data.
- Refinement of West Lab emissions to reflect an additional decrease in EtO emissions estimates from sampling activities.

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